Town and City POPULATION PLUS Symbols

Incorporating Series IIa Symbol Designs

Version "D" Created 02/12/02

Marker Symbols by Data Deja View for:
Workstation Arc/Info, ArcView 3.x, and ArcGIS 8.x Desktop

Note: Many of the symbols in this set are complex in nature and their use may involve concepts new to some users. To make best use of this set, please read through this Installation and User Guide.

The POPULATION Part

Forty plus state highway and tourist maps and four road atlases were examined to identify different conventions for symbolizing populations for towns and cities. The results were synthesized into a single expansive set of symbols.

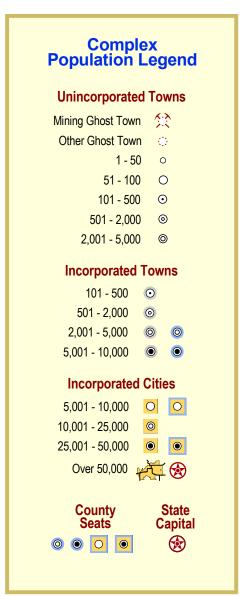
Some of the "bells and whistles" incorporated in this set include uniform means of differentiating towns versus cities and incorporated versus unincorporated towns. Special town and city statuses (such as ghost town, county seat and capital) can also be shown.

The set includes sufficient symbols to allow users a choice in how they depict population categories.

Simple Population Legend 1 - 50 0 51 - 100 101 - 500 0 501 - 2,000 Θ 2,001 - 5,000 \oplus 5,001 - 10,000 \odot 10,001 - 25,000 **o** 25,001 - 50,000 0 Over 50,000

Sample Legends

These examples demonstrate the diversity of population categorization possible with this set. These symbols should meet most users' common needs for population symbols



The PLUS Part

This portion of the Population Plus marker set has evolved from a research project with the primary motivation of developing symbology that could show measures of threat level and containment capability RELATIVE TO POPULATION CENTER SIZE CLASSIFICATIONS.

The idea was to be able to present threat and containment data in a manner that would allow the viewer to quickly visually identify basic priorities for allocating federal and state funding to local communities. The population element is obviously important; two communities, each with high threat levels and low containment capability should not receive the same amount of aid for equipment and training if their populations differ significantly.

There are also many other mapping situations where such "population plus" symbology would be useful.

Goals that emerged during the project were:

- (1) Explore the feasibility of manually constructing two- and three-variable graduated symbols from basic (single variable) symbols.
- (2) Develop alternative symbology for use where map elements are so close that the use of graduated symbols would cause unacceptable symbol collisions (changes in color would be substituted for changes in symbol magnitude).
- (3) Develop alternatives to constructing complex symbols by manually placing and scaling simple symbol elements.
- (4) Develop complex symbols to depict population and one or two additional community-related attributes.

As of March 2001, Data Deja View's research has produced a project "symbol toolset". The next phase of the project will be to: (A) explore using that toolset, (B) determine whether or not the project has practical goals, and (C) identify any symbol design improvements that could make the toolset more useful.

Data Deja View believes that the best means of carrying this out is to release the toolset for general use and to encourage user feedback. And so it shall be. The toolset is described on the following pages.

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Population Plus One and Two Additional Variables

The "Plus" in Population Plus refers to additional sets of symbols designed to allow a single marker to represent population groupings as well as one or two other variables that might be associated with that population group. Some examples of use include categorizing by population center size and: (1) Threat level and containment capability, (2) Change in school enrollment and change in state aid, (3) Percentage classes for the increase or decrease in population since previous census, etc.

Twelve of the symbols from palette/style DDVTCP1D were combined with other symbols: a single concentric circle, half circles and two concentric circles. The latter were given patterned edges to highlight that they represented other data (it was not felt necessary to do this for the others).

The Plus One Variable palette/style is DDVTCP9D. The Plus Two Variable style is DDVTCP3D (ArcView 3.x users, please see below).

Palette and Style Arrangement and Appearance

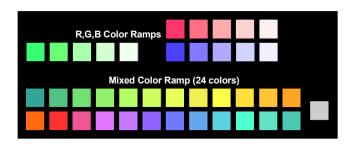
The symbols for Population Plus One and Two Variables have been arranged so that each group of symbols has the same relative alignment. Given the small size of the population part of the symbol, this should make it easier to find a specific marker (see example at right).

Blank symbols and locator symbols were used obtain the desired alignment. The locator symbols are upper and lower case white letters on a gray circle and are unique to a symbol group within each palette/style.

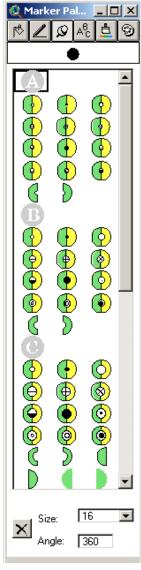
In addition to the Population Plus symbols, symbols are included at the end of each group for use in constructing the legend for the additional variables (DDVTCP1D can be used to make the legend for the population portions of the symbols).

The Plus Two Variables and ArcView 3.x Coloring

Standard ArcView 3.x applies a user color change to all symbol layers that are not color locked. Therefore, different colors cannot be applied to different symbol layers. Without programming a special interface, the only way to implement the Plus Two Variable symbols was to pre-color and color-lock one of the variables. The 4 color ramps shown below, along with the No Data Gray color, were used to do this. These colors have been included in DDVTCP0D.AVP and DDVTCP0D.Style so the same colors can be user-applied to the second, color change enabled layer.

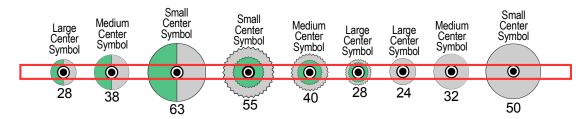


As appears in the palette manager sample above, when constructing the symbols these colors were applied to both the color-locked and user-changeable layers within the symbols. However, for identification purposes in the examples below, the color-locked layers are shown in red and the user-changeable layers are shown in gray.



Symbol Component Size and Marker Size Choices

The size, scale and viewing distances chosen for a map will determine the marker size to use for Population Plus symbols. The proximity of towns, cities and other map elements will also impact this choice, as does the design of the symbols themselves. Their design is such that the center population portion is much smaller than the outside variable portions. No single center-to-outside size ratio seemed to give good results with both large and small marker sizes. Therefore each Plus One and Plus Two Variable symbol set includes (relative to overall symbol size) three center sizes: small, medium and large, as shown below.



Relative Marker Size When Symbol Sizes are Changed to Make All Centers Approximately the Same

Summary of Included Palettes/Styles

The right-hand column lists Plus Two Variable palettes with one color locked layer created for use with ArcView 3.x. Note that ArcGIS 8.x users may wish to use these also to save time in applying colors.

DDVTCP0D - Colors used with symbol sets	DDVTCP3D - Half Circles, Small Center
	DDVTCP4D - Half Circles, Medium Center
DDVTCP1D - Town and city population symbols	DDVTCP5D - Half Circles, Large Center
DDVTCP9D - Plus One Variable Set	DDVTCP6D - Concentric Circles, Small Center
DDVTCP2D - Plus Two Variable Set (ArcGIS only)	DDVTCP7D - Concentric Circle, Medium Center
,	DDVTCP8D - Concentric Circles, Large Center

Fonts, Palettes and Styles

The TTF and AVP or STYLE files that must be installed for each set of symbols are shown below along with illustrations of the symbols in each set. For large sets, only a sample of symbols is included.

Data Deja View recommends that all four True Type Fonts (TTFs) be installed, regardless of which palettes or styles it is intended to use. There are only four TTFs and this would allow users to switch from one palette/style to another without having to stop and install additional fonts.

The Population Symbols

Town and City Population Symbol Set		◈ 🏵 🕏	
Symbol Set	$\star \dot{} \dot{} \dot{} \dot{} \dot{} $	❷ ❷ ❷	\bigcirc \ominus \oplus
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o • O	❸ ❷ ❸	lacktriangle	OO
\ominus \oplus \otimes	\bigcirc \bigcirc \bigcirc	OO	
⊕ • ⊙	\otimes $lacktriangle$	○⊕⊕	
⊚⊚●	OO	\otimes	
O	OO	⊙ ⊚ ⊚	
\otimes	\oplus \odot	●OO	
0 0	OOO	⊕ ⊙	
OO	* * *	OO	
\oplus \odot	* * *		

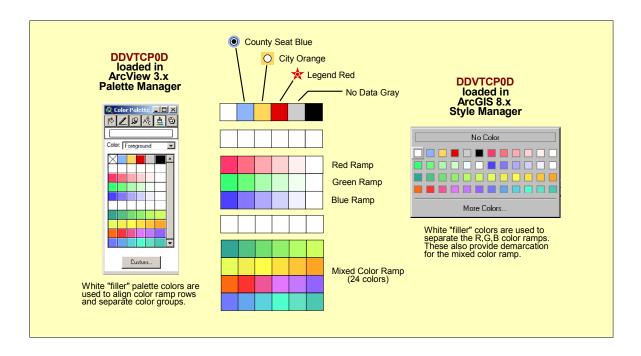
FONTS	FONT# (ArcInfo)	FONTNAME (ArcInfo)	MARKERSET (ArcInfo)	PALETTE (ArcView)	STYLE (ArcGIS 8)
DDVTCP1D.TTF	76101	n/a	n/a	DDVTCP1D.AVP	DDVTCP1D.Style
DDVTCP2D.TTF	76102	n/a			•
DDVTCP3D.TTF	76103	n/a			
DDVTCP4D.TTF	76104	n/a			

For ArcView 3.x, all of the above symbols have one user-changeable color layer.

For ArcGIS 8.x only, the symbols shown above with orange and blue color layers as well as those with red and blue color layers are set so that both of those layers are user-changeable. All other symbols have one user-changeable color layer.

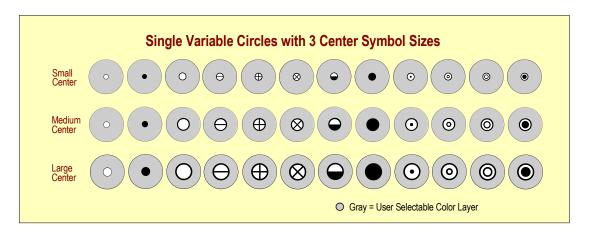
Note: In these font/palette/style lists the required elements are printed in black. Any gray-printed fonts are not needed for that set, however it is recommended that all four fonts be installed at the beginning. The Arc/Info workstation components are not available (n/a). At this point Data Deja View is not planning to create them at any time in the future.

The Color Set

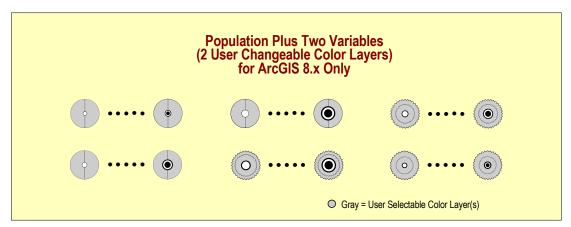


FONTS	FONT# (ArcInfo)	FONTNAME (ArcInfo)	MARKERSET (ArcInfo)	PALETTE (ArcView)	STYLE (ArcGIS 8)
n/a	76101	n/a	n/a	DDVTCP0D.AVP	DDVTCP0D.Style

The PLUS Symbol Toolset



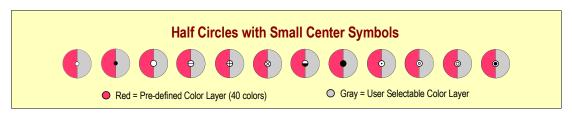
FONTS	FONT# (ArcInfo)	FONTNAME (ArcInfo)	MARKERSET (ArcInfo)	PALETTE (ArcView)	STYLE (ArcGIS 8)
DDVTCP1D.TTF DDVTCP2D.TTF DDVTCP3D.TTF DDVTCP4D.TTF	76101 76102 76103 76104	n/a n/a n/a n/a	n/a	DDVTCP9D.AVP	DDVTCP9D.Style



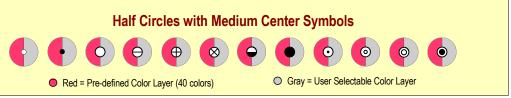
FONTS	FONT# (ArcInfo)	FONTNAME (ArcInfo)	MARKERSET (ArcInfo)	PALETTE (ArcView)	STYLE (ArcGIS 8)
DDVTCP1D.TTF	76101	n/a	n/a	n/a	DDVTCP2D.Style
DDVTCP2D.TTF	76102	n/a			·
DDVTCP3D.TTF	76103	n/a			
DDVTCP4D.TTF	76104	n/a			

Note: see Changing Multiple Color Layers under ArcGIS 8 Desktop Installation Instructions if you are not familiar with how to do this.

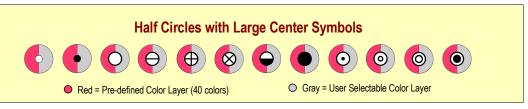
The following are Population Plus two-variable symbol sets where one variable has been pre-colored and color-locked and the second variable has been pre-colored and user color change-enabled.



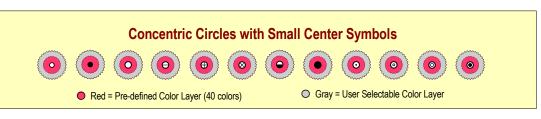
FONTS	FONT# (ArcInfo)	FONTNAME (ArcInfo)	MARKERSET (ArcInfo)	PALETTE (ArcView)	STYLE (ArcGIS 8)
DDVTCP1D.TTF	76101	n/a	n/a	DDVTCP3D.AVP	DDVTCP3D.Style
DDVTCP2D.TTF	76102	n/a			•
DDVTCP3D.TTF	76103	n/a			
DDVTCP4D.TTF	76104	n/a			



FONTS	FONT# (ArcInfo)	FONTNAME (ArcInfo)	MARKERSET (ArcInfo)	PALETTE (ArcView)	STYLE (ArcGIS 8)
DDVTCP1D.TTF	76102	n/a	n/a	DDVTCP4D.AVP	DDVTCP4D.Style
DDVTCP2D.TTF	76102	n/a			•
DDVTCP3D.TTF	76103	n/a			
DDVTCP4D.TTF	76104	n/a			

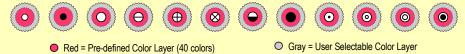


FONTS	FONT# (ArcInfo)	FONTNAME (ArcInfo)	MARKERSET (ArcInfo)	PALETTE (ArcView)	STYLE (ArcGIS 8)
DDVTCP1D.TTF	76102	n/a	n/a	DDVTCP5D.AVP	DDVTCP5D.Style
DDVTCP2D.TTF	76102	n/a			•
DDVTCP3D.TTF	76103	n/a			
DDVTCP4D.TTF	76104	n/a			



FONTS	FONT# (ArcInfo)	FONTNAME (ArcInfo)	MARKERSET (ArcInfo)	PALETTE (ArcView)	STYLE (ArcGIS 8)
DDVTCP1D.TTF DDVTCP3D.TTF DDVTCP3D.TTF DDVTCP4D.TTF	76101 76102 76103 76104	n/a n/a n/a n/a	n/a	DDVTCP6D.AVP	DDVTCP6D.Style

Concentric Circles with Medium Center Symbols



FONTS	FONT# (ArcInfo)	FONTNAME (ArcInfo)	MARKERSET (ArcInfo)	PALETTE (ArcView)	STYLE (ArcGIS 8)
DDVTCP1D.TTF DDVTCP2D.TTF DDVTCP3D.TTF DDVTCP4D.TTF	76101 76102 76103 76104	n/a n/a n/a n/a	n/a	DDVTCP7D.AVP	DDVTCP7D.Style

Concentric Circles with Large Center Symbols												
0		0			(S)			0	(0	0	
	Red = Pre-defined Color Layer (40 colors)							O Gray = User Selectable Color Layer				

FONTS	FONT# (ArcInfo)	FONTNAME (ArcInfo)	MARKERSET (ArcInfo)	PALETTE (ArcView)	STYLE (ArcGIS 8)
DDVTCP1D.TTF DDVTCP2D.TTF DDVTCP3D.TTF DDVTCP4D.TTF	76101 76102 76103 76104	n/a n/a n/a n/a	n/a	DDVTCP8D.AVP	DDVTCP8D.Style

ArcView 3.x Installation Instructions

NOTE: These instructions assume you temporarily saved the WinZip file in your C:\TEMP directory and unzipped the files in that location. Substitute paths as appropriate to your system and file names according to the file set you received. Instructions assume a WIN 95, WIN 2000 or NT 4.0 installation (action with WIN XP should be similar). C:\TEMP should now contain the following:

After extraction there will be three classes of files:

TRUE TYPE FONTS: DDVxxxxx.TTF Marker sets will always have at least one

font and may have thirty or more. (e.g.: DDVCA01D.TTF, DDVMAP1B.TTF).

ARCVIEW PALETTES: DDVxxxxx.AVP Marker sets will have four or more palettes.

XXinstall.DOC (or possibly .HTM or .PDF) – these instructions.

Note that \.....\ refers to the path where ArcView as installed. For example "D:\ESRI\AV_GIS31\ARCVIEW"

IMPORTANT: Make sure that ArcView is CLOSED before installing the fonts. Once Arcview is open, it doesn't recognize any newly loaded fonts until it is closed and then opened again. This may seem basic, but it has been the "gotcha" for lot of people.

STEP 1 INSTALL THE FONT - Navigate as follows:

Start -> Settings -> Control Panel -> Fonts -> File -> Install New Font

When prompted navigate to C:\TEMP and the names of the true type font(s) should appear. Select DDVxxxx (True Type). Also select the any other fonts included in this set of symbols. Press OK.

STEP 2 INSTALL THE PALETTE - Using Explorer or File Manager copy DDVxxxx.AVP to \.....\SYMBOLS.

STEP 3 LOAD PALETTE(S) - Now its okay to open ArcView. Load the palettes:

Window menu -> Show Symbol Window -> Palette Manager -> Load

This will invoke the Load Palette dialog. Navigate to \....\SYMBOLS and select DDVxxxx.AVP. Don't worry if the load takes somewhat longer than for other palettes; that's normal.

The DDVxxxx symbols should now appear under Markers after any already loaded marker sets.

STEP 4 Use them ! ... and hopefully produce your Layouts a little more quickly.

NOTE: If you have installation problems, please refer to the Troubleshooting section below.

Data Deja View has only tested markers on one UNIX platform. The good news is that the markers installed successfully. The bad news is that UNIX ArcView does not put together composite markers the same way as WinTel ArcView. Some layer misalignments may be so severe that the marker is not useable. Markers with all color layers about the same size don't seem to exhibit this problem and appear to be useable.

With DDV series IIa shield designs, users may now see a decrease in UNIX alignment problems.

IMPORTANT: Make sure that ArcView is CLOSED before installing the fonts. Once Arcview is open, it doesn't recognize any newly loaded fonts until it is closed and then opened again. This may seem basic, but it has been the "gotcha" for lot of people.

And as with all UNIX systems "Don't forget your permissions!"

STEP 1 - Copy all the fonts to the font directory under ArcView. In the system tested by DDV this directory path was:

/usr/esri/arcview3/fonts

STEP 2 - Copy all the palettes to the symbols directory under ArcView. In the tested system this directory path was:

/usr/esri/arcview3/symbols

STEP 3 - Edit the "font.ndx" file to add entries for the new fonts. In the tested system the path to this directory was:

/usr/esri/arcview3/etc/font.ndx

Sample entries used for two DDV fonts are as follows:

TRUETYPE 990004 \$AVHOME/fonts/ddvhazib.ttf 990004
TRUETYPE ddvhaz1b
NAME = ddvhaz1b
FAMILY = ddvhaz1b

FAMILY = ddvhaz1b STYLE = Normal

TRUETYPE 990005 \$AVHOME/fonts/ddvvt01c.ttf 990005

TRUETYPE ddvvt01c NAME = ddvvt01c FAMILY = ddvvt01c

STYLE = Normal

STEP 4 - Open up ArcView and hopefully enjoy (at least some) of these custom symbols.

NOTE: Some UNIX flavors may need additional coaxing and coddling. See your (hopefully friendly and available) UNIX administrators.

ArcGIS 8 Desktop Installation Instructions

After extraction there will be three classes of files:

TRUE TYPE FONTS: DDVxxxxx.TTF Marker sets will always have at least one

font and may have thirty or more. (e.g.: DDVCA01D.TTF, DDVMAP1B.TTF).

STYLESETS: DDVxxxxxx.Style Marker sets will have four or more style files.

INSTRUCTIONS: XXinstall.PDF This document.

IMPORTANT: Make sure that ArcGIS Desktop is CLOSED before installing the fonts. Once ArcGIS is open, it may not recognize newly loaded fonts until it is closed and then opened again.

- STEP 1 INSTALL THE FONT(S) ESRI font installation instructions indicate that ArcGIS will recognize all fonts placed in the system font folder (typically C:\WINNT\FONTS). Data Deja View has successfully used fonts placed elsewhere by installing them with Adobe Type Manager (ATM).
- STEP 2 INSTALL THE STYLE(S) The .Style files may be placed in any directory (folder).
- STEP 3 LOAD STYLE(S) Open ArcMap and navigate as follows to load styles.

Tools menu -> Styles -> Style Manager

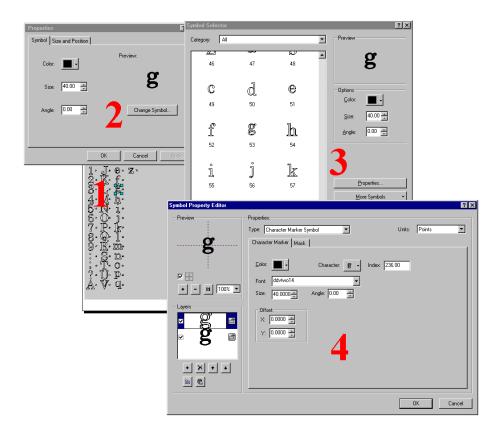
This will invoke the Style Manager window. In the upper right corner, click on the Styles button. From the drop down menu that appears, choose Add (near the bottom of the drop down). An Open

dialog box appears. Use it to navigate to the directory where you placed the style files. Select the desired style and click on the Open button. The Style will now appear in the left hand window of the Style Manager, indicating that it is active in this ArcMAP session.

NOTE: If you have installation problems, please refer to the Troubleshooting section below.

Normal marker character selection and color change via Properties alone will result in a change to the color of all layers not color-locked. To control color changes separately, use the following procedure, which references the illustration below. This illustration was created for DDV's 2 Color Letter/Number Marker Styleset and shows a letter symbol rather than a Population Plus marker. However, the process is the same for the symbols in this set.

- 1 Select the marker character in the view and right click on it to invoke the Properties menu.
- 2 Click on Change Symbol to invoke the Symbol Selector menu.
- 3 Click on Properties to invoke the Symbol Properties Editor.
- 4 Now each layer making up the symbol can be accessed separately and its color changed.



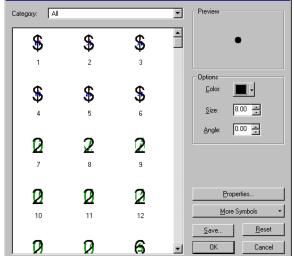
Accessing the ArcGIS 8.x Symbol Properties Editor (see text above)

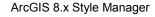
Troubleshooting:

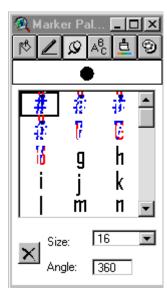
Problems With Initial Installation: People frequently experience problems with font installation for ArcView 3.x and ArcGIS 8.x. This occurs with ESRI fonts. Data Deia View (DDV) fonts and other custom fonts and has been experienced in Win 95, Win 98, Win NT and Win2000. DDV fully expects to see the problem continue in Win XP. It is evidenced by alphanumeric and special character symbols appearing instead of the expected marker symbols (see examples below). In most cases the appearance of these "weird" characters is due to a failure of the Windows operating system to properly register the font(s).

Symbol Selector **T** _ \$ \$ \$

Typical Appearance of Marker Symbols When Font Installation Problems Occur







ArcView 3.x Palette Manager

First Line of Troubleshooting: Make sure that ArcView 3.x and ArcGIS 8.x are closed. Then open up the Control Panel's Fonts folder and look to see if the fonts show up.

On slower machines you may sometimes notice that the fonts aren't there, but that the screen repaints and the missing fonts suddenly appear. Most of the time that this occurs, the fonts are now properly registered. However, on fast machines you probably won't have a chance to see whether they are there or not before the repaint is completed.

If the fonts (TTF files) are not there, try installing them using the Font folder's Install New Fonts option:

If the fonts are there (or you are not sure whether they only appeared after a screen repaint), select and delete the font(s) and then install them again from the Font folder.

Now open up ArcView 3.x and/or ArcGIS 8.x and try loading the palette or style again. Chances are that things will now work properly.

Second Line of Troubleshooting: Check that you have the proper fonts for the palette/style series you are trying to use (refer to the lists included in this document). The font and palette versions must match. If you have only the fonts from an old marker set version installed and try to load the palette from a new version, the "weird" characters will show up (and vice versa).

E.g., installing DDVWY01B.TTF, DDVWY02B.TTF and DDVWY03B.TTF and then loading palette DDVWY01C.AVP won't work because they were generated from different updates and the palette is hard coded with the names of the fonts it expects to use.

Third Line of Troubleshooting: If there is another computer available to you with the appropriate software on it, try installing the fonts on that machine and see if the palette/style will load successfully there. If so, contact your system administrator or IT department for assistance. There is likely an operating system problem.

If You Still Can't Get Things to Work: Make note of what happened in the above troubleshooting steps and contact DDV, including this information. We will attempt to address any problems resulting from our end. In doing this we may ask you to send the fonts and palettes/styles that won't install back to DDV for analysis.

Other Troubleshooting Help: The ESRI online discussion groups, ArcView-L and ESRI-L have from time to time covered this topic and occasionally have found different causes and solutions. Please try looking back at older postings and/or in the archives before posting your own message. Seeing the same questions posted repeatedly does get rather old quickly.

The Magic Approach: Some time ago ESRI technical support indicated that some people were supposedly able to cure the problem by opening file manager or explorer and dragging the fonts to another directory and then immediately dragging them back again. (It's likely they were working with all fonts installed in the WINNT/FONTS directory or its equivalent in another Windows OS.) If you try this it might help to put a black cat on top of the monitor (then again it might not).

Markers Stop Working Properly: If marker sets that used to load successfully suddenly start to show up as "weird" characters, the font has somehow been deleted or lost registration on the system. Follow the above steps to correct the problem.

Print Problems Involving Markers: DDV does not have the resources to be able to successfully deal with most printing problems. The following is passed along as an observation only. In December 2001, this site started to occasionally experience situations where marker symbols showed up correctly on the screen in ArcView 3.x and ArcGIS 8, but in the middle of printing suddenly partially reverted to "weird" characters. Reprints of the same pages always resulted in all marker symbols printing correctly. This occurred in a peer-to-peer Ethernet environment with the GIS client and print server both running NT 4.0 with SP 6a.

PROBLEM UPDATE: Since the problem was first included in this documentation, the print server suffered an unrecoverable hard disk crash for the "C" drive. After the disk was replaced and the operating system and updated print drivers installed, print submission on the client workstation was noted to take longer, however the "weird" symbols did not reoccur. This would seem to verify that it was not an application problem.

Avoiding Font Problems: If you start having problems with fonts, DDV recommends the use of Adobe Type Manager (ATM). This software is relatively inexpensive and has cured a number of font related problems at this site. Since starting to use ATM the only times that initial font registration problems have occurred here are when fonts failed to register properly when installed as part of a software installation (i.e.; the fonts were loaded by the application software, not through ATM).

ATM also cured interminable repainting of all on-screen icons and associated slow downs or hang-ups when the system already had a large number of fonts installed and Control Panel's font manager was used to install additional fonts.

DDV is not aware of anyone who has had font install problems while using ATM, but would appreciate hearing the circumstances surrounding any failures with its use.

USER FEEDBACK:

Data Deja View solicits feedback about this symbol set, especially in the following areas:

The Population Symbols - Any population symbol needs not met by this set

The PLUS symbols: -- What kind of maps they are used on

-- The variables they are used to depict

-- Mapping situations where their use was successful
-- Mapping situations where their use was not successful

-- How the symbol designs could be improved

-- Other ideas for reaching project goals

CONTACT INFORMATION:

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Phone: 307-587-6667

Monday thru Friday 8am to 5pm Mtn time.



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